

CLAIM AMENDMENTS

Please replace the pending claims with the following:

1. (Previously presented) An electrochemical device comprising a cathode, an anode and an electrolyte arranged between the cathode and anode, wherein the electrolyte comprises an ionic liquid comprising an anion and a cation, which cation has the formula N-methyl-N-hexyl-pyrrolidinium a pyrrolidinium ring structure,

wherein the active material of the cathode comprises as its major constituent by mass an intercalation material having an upper reversible-potential-limit of at most 4 V versus Li/Li⁺ and comprising any of the following compounds: Li₄Ti₅O₁₂, LiTi₂O₄, Li_{4-y}Mg_yTi₅O₁₂ (0 ≤ y ≤ 1), V₂O₅, Li₄Mn₅O₁₂, or Li_{4-y}Mg_yMn₅O₁₂ (0 ≤ y ≤ 1).

2. (Previously presented) The electrochemical device of claim 1, wherein the electrochemical device is a primary battery or a rechargeable battery or an electrochemical capacitor.

3. (Previously presented) The electrochemical device of claim 1, wherein the electrochemical device is configured for use at a temperature between 50 and 200 °C.

4. (Previously presented) The electrochemical device of claim 3, wherein the electrochemical device is configured for use at a temperature between 60 and 200 °C.

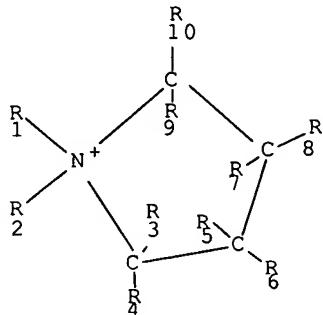
5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Previously presented) The electrochemical device of claim 1, wherein the

N-methyl-N-hexyl-pyrrolidinium pyrrolidinium-structure is:



wherein R₁ is a methyl group, R₂ is a hexyl group, and R₃-R₁₀, R₄-R₁₀ are selected from the group consisting of: H, F, separate alkyl groups which may be branched, substituted and comprise heteroatoms, and separate phenyl groups which may be substituted and comprise heteroatoms.

9. (Currently amended) The electrochemical device of claim 1, wherein the anion of the ionic liquid comprises any of the following compounds:

ClO₄⁻, PF₆⁻, BF₄⁻, AsF₆⁻, a halogen ion, N(CF₃)₂⁻, N(CF₃SO₂)₂⁻, CF₃SO₃⁻, N(CH₃SO₂)₂⁻, N(C₂F₅SO₂)₂⁻, B(C₂O₄)₂⁻, or C(CF₃SO₂)₃⁻.

ClO₄⁻, PF₆⁻, BF₄⁻, AsF₆⁻, a halogen ion, N(CF₃)₂⁻, N(CF₃SO₂)₂⁻, CF₃SO₃⁻, N(CH₃SO₂)₂⁻, N(C₂F₅SO₂)₂⁻, B(C₂O₄)₂⁻, or C(CF₃SO₂)₃⁻.

10. (Previously presented) The electrochemical device of claim 1, wherein the electrolyte further comprises a salt.

11. (Previously presented) The electrochemical device of claim 10, wherein the salt comprises an alkali salt.

12. (Previously presented) An electrochemical device comprising a cathode, an anode and an electrolyte arranged between the cathode and anode, wherein the electrolyte comprises an ionic liquid comprising an anion and a cation, which cation has a pyrrolidinium ring structure, wherein the active material of the cathode comprises as its major constituent by mass an intercalation material having an upper reversible-potential-limit of at most 4 V versus Li/Li⁺ and comprising any of the following compounds: Li₄Ti₅O₁₂, LiTi₂O₄, Li_{4-y}Mg_yTi₅O₁₂ (0 ≤ y ≤ 1), V₂O₅, Li₄Mn₅O₁₂, or Li_{4-y}Mg_yMn₅O₁₂ (0 ≤ y ≤ 1);

The electrochemical element of claim 10, wherein the electrolyte further alkali salt comprises a salt comprising MgCF₃SO₂ or Mg(ClO₄)₂.

13. (Cancelled)

14. (Cancelled)

15. (Previously presented) An electrochemical device comprising a cathode, an anode and an electrolyte arranged between the cathode and anode, wherein the electrolyte comprises an ionic liquid comprising an anion and a cation, wherein the cation has a pyrrolidinium ring structure , wherein the cathode comprises LiCrTiO₄ as the major constituent by mass of the active material.

16. (Previously presented) An electrochemical device comprising a cathode, an anode and an electrolyte arranged between the cathode and anode, wherein the electrolyte comprises an ionic liquid comprising an anion and a cation, wherein the cation has a pyrrolidinium ring structure, wherein the cathode comprises TiS₂ as the major constituent by mass of the active material.

17. (Previously presented) An electrochemical device comprising a cathode, an anode and an electrolyte arranged between the cathode and anode, wherein the which electrolyte comprises an ionic liquid comprising an anion and a cation, wherein the cation has a pyrrolidinium ring structure, wherein the cathode comprises Li_{1-y}M_yFePO₄, where M=Mg, Nb, Zr, Ti, or Al and (0 ≤ y ≤ 0.02), as the major constituent by mass of the active material.

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Previously presented) The electrochemical element of claim 1, wherein the cathode or anode comprises polyvinylidenefluoride (PVDF) as a binder material.

23. (Previously presented) The electrochemical element of claim 1, wherein the cathode or anode comprises polytetrafluoroethylene (PTFE) as a binder material.

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (New) The electrochemical device according to claim 15 wherein the electrochemical device is a primary battery or a rechargeable battery or an electrochemical capacitor.

28. (New) The electrochemical device according to claim 15 wherein the pyrrolidinium ring structure has the formula N-methyl-N-hexyl-pyrrolidinium.

29. (New) The electrochemical device according to claim 16 wherein the electrochemical device is a primary battery or a rechargeable battery or an electrochemical capacitor.

30. (New) The electrochemical device according to claim 16 wherein the pyrrolidinium ring structure has the formula N-methyl-N-hexyl-pyrrolidinium.

31. (New) The electrochemical device according to claim 17 wherein the electrochemical device is a primary battery or a rechargeable battery or an electrochemical capacitor.

32. (New) The electrochemical device according to claim 17 wherein the pyrrolidinium ring structure has the formula N-methyl-N-hexyl-pyrrolidinium.